

Having described the invention in detail, what is claimed as new is:

1. A portable drilling apparatus for drilling a bore hole into a workface, the apparatus comprising:
  - (a) a pair of hydraulic cylinders horizontally disposed and arranged generally parallel one to another;
  - (b) a head mounting plate assembly supported by the pair of hydraulic cylinders; and
  - (c) a drill motor supported by the head mounting plate assembly, the drill motor driving a drill bit extending forward of the pair of hydraulic cylinders for drilling into the workface.
2. Apparatus as in Claim 1 wherein the hydraulic cylinders each include a barrel and a support rod extending axially through the barrel, the barrel being movable along the support rod and having a flange attachable to the head mounting plate assembly.
3. Apparatus as in Claim 2 wherein each barrel has a pair of the flanges that are spaced apart and the head mounting plate assembly is disposable between the flanges.
4. Apparatus as in Claim 2 wherein the head mounting plate assembly comprises:
  - (a) a head bracket;
  - (b) a yoke fixed to each end of the head bracket, the yoke being sized to straddle the barrel; and
  - (c) means to lock the head bracket to the flange on the barrel.
5. Apparatus as in Claim 4 wherein the head mounting plate assembly comprises a pair of head brackets each attached at opposite ends to one of the yokes, the drill motor being mounted to one of the head brackets and each head bracket having a central opening to permit passage of a spindle of the drill motor.
6. Apparatus as in Claim 5 including a handle extending between the head brackets.

7. Apparatus as in Claim 5 wherein the head brackets each have aligned openings adjacent the yokes, the aligned openings coinciding with aligned openings in the flanges so as to receive a locking pin therethrough for locking the head mounting plate assembly to the barrels.

8. Apparatus as in Claim 2 comprising front and rear support assemblies releasably connectable to the ends of the support rods and maintaining the support rods parallel one to another.

9. Apparatus as in Claim 8 wherein the rear support assembly comprises:

(a) a rear plate;

(b) a rear receptacle at each end of the rear plate, each rear receptacle having a forward facing opening to receive an aft end of the support rod; and

(c) rear anchor tubes at each end of the rear plate, the rear anchor tubes releasably receiving means for fixing the rear plate and therefore the rear support assembly in position relative to the workface.

10. Apparatus as in Claim 8 wherein the front support assembly comprises:

(a) a front plate having a through opening to permit passage of a drill pipe through the front plate;

(b) a rear receptacle at each end of the front plate, each front receptacle having a rearward facing opening to receive a forward end of the support rod; and

(c) front anchor tubes at each end of the front plates, the front anchor tubes releasably receiving means for fixing the front plate and therefore the front support assembly in position relative to the workface.

11. Apparatus as in Claim 11 wherein the front support assembly comprises:

(a) two front plates each with a through opening to permit passage of a drill pipe through the two front plates, the plates being generally parallel and defining a space therebetween;

(b) a pair of wrench stops in the space between the two front plates, one wrench stop being to either side of the through openings in the front plates, the wrench stops defining guide surfaces; and

(c) a vise releasably inserted into the space and between the guide surfaces, the vise being U-shaped to bracket and engage against flats on the drill pipe.

12. A portable drilling apparatus for drilling a borehole into a work face, the apparatus comprising:

(a) a pair of hydraulic cylinders arranged generally parallel one to another, each cylinder having a barrel and a support rod extending axially through the barrel, the barrel being movable forward and aft along the support rod in responses to the introduction of fluid under pressure into one end or another of the barrel;

(b) a head mounting plate assembly releasably attached to the barrel of both cylinders;

(c) a drill motor supported by the head mounting plate assembly, the drill motor driving a drill bit extending forward of the pair of hydraulic cylinders towards the work face; and

(d) forward and rear assemblies releasably connecting forward and aft ends of the support rods one to another.

13. Apparatus as in Claim 12 comprising

(a) a pair of spaced flanges on each barrel; and

(b) the mounting plate assembly including yokes receivable between the flanges.

14. Apparatus as in Claim 13 wherein the mounting plate assembly has a head bracket extending between the yokes, the drill motor being attached to the head bracket.

15. Apparatus as in Claim 14 wherein the head bracket has an opening to accommodate passage of a spindle of the drill motor and a further opening aligned with an opening in each of the spaced flanges to accommodate passage of a lock pin for attaching the mounting plate assembly to the barrels.

16. Apparatus as in Claim 12 wherein at least one of the forward and rear assemblies include anchor tubes releaseably receiving an adjustable jack that is operable to fix the forward and rear assemblies in position relative to workface.

17. A portable drill for boring horizontal underground holes comprising:

- (a) a pair of hydraulic cylinders each comprising a support rod and a barrel slidably disposed on the support rod, each of the barrels having a mounting flange;
- (b) rear support connectable to an aft end of each support rod;
- (c) a front support connectable to a forward end of each support rod, the rear and front supports together supporting the cylinders generally parallel one to another;
- (d) a head mounting plate connectable at opposite ends to the barrels wherein the movement of each barrel relative to the support rod is transmitted to the head mounting plate; and
- (e) a drill motor carried by the head mounting plate and operatively connected to a drill bit extending to a location forward of the front support.

18. Apparatus as in Claim 17 further comprising a pair of spaced flanges on each of the barrels and the head mounting plate being retained between the flanges.

19. Apparatus as in Claim 18 wherein the head mounting plate and flanges have aligned openings to accommodate a locking pin for holding the head mounting plate to the barrels.

20. A method for assembling a drilling apparatus for drilling small diameter bore holes comprising:

- (a) arranging a pair of thrust cylinders one parallel to the other, each cylinder having a barrel and a support rod extending axially through the barrel wherein introducing fluid pressure into one end or the other of the barrel moves the barrel forward and aft respectively along the support rod;
- (b) connecting forward and aft ends of the support rods one to another; and

(c) releasably attaching opposite ends of a head mounting plate assembly to each of the barrels, the head mounting plate assembly carrying a drill motor for driving a drill bit that extends forward of the pair of cylinders.

21. A method as in Claim 20 comprising connecting the forward and aft ends of the support rods together with forward and rear support assemblies respectively that maintain the support rods spaced apart and parallel one to another and adjusting the attitude of the drilling apparatus with jacks attachable to at least one of the forward and rear support assemblies.